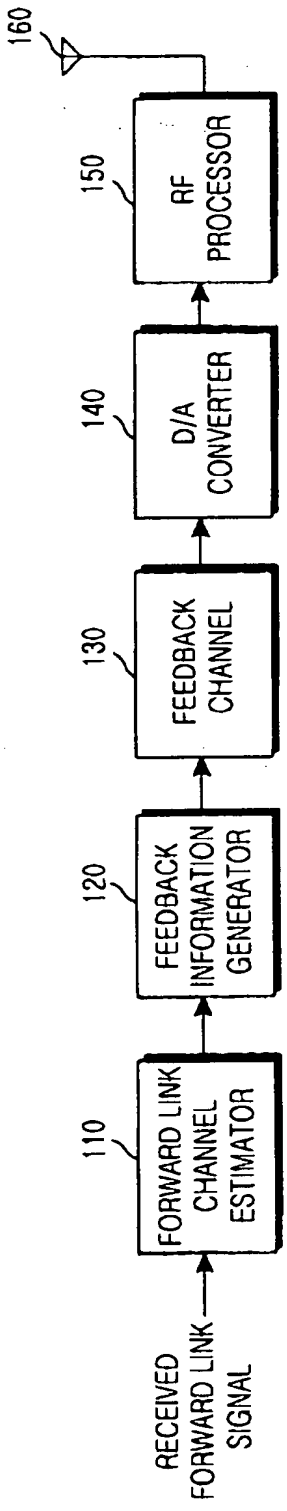
RECEIVED FORWARD LINK SIGNAL
110
FORWARD LINK CHANNEL ESTIMATOR
120
FEEDBACK INFORMATION GENERATOR
130
FEEDBACK CHANNEL
140
D/A CONVERTER
150
RF PROCESSOR
160

FIG.1

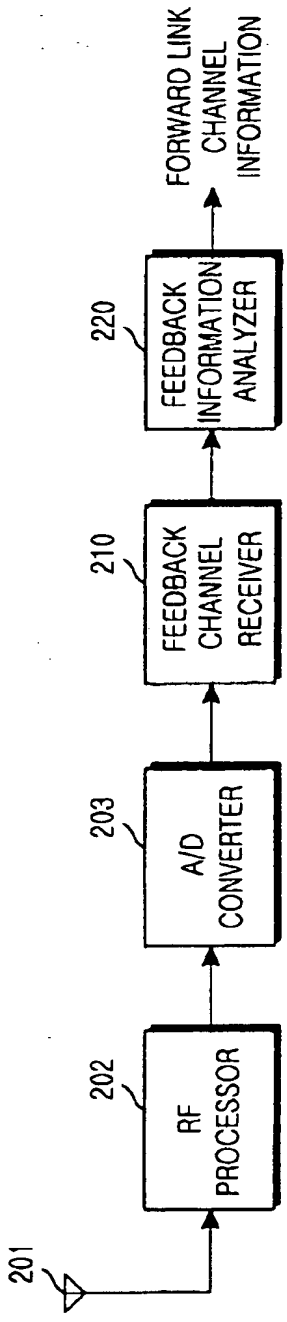
201
202
RF PROCESSOR
203
A/D CONVERTER
210
FEEDBACK CHANNEL RECEIVER
220
FEEDBACK INFORMATION ANALYZER
FORWARD LINK CHANNEL INFORMATION

FIG.2

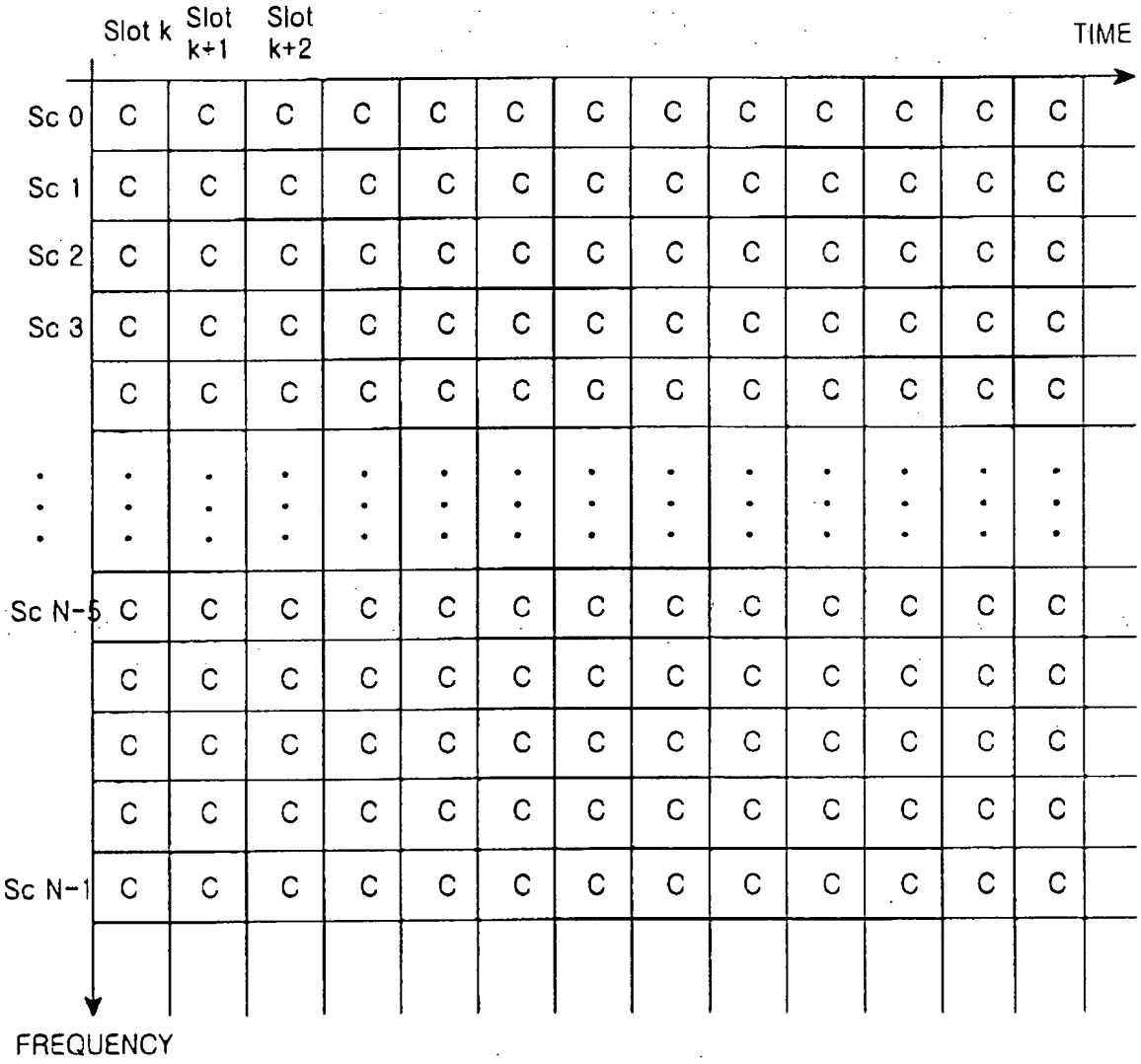
Slot k
Slot k+1
Slot k+2
TIME
Sc 0
Sc 1
Sc 2
Sc 3
Sc N-5
Sc N-1
C
FREQUENCY

FIG.3

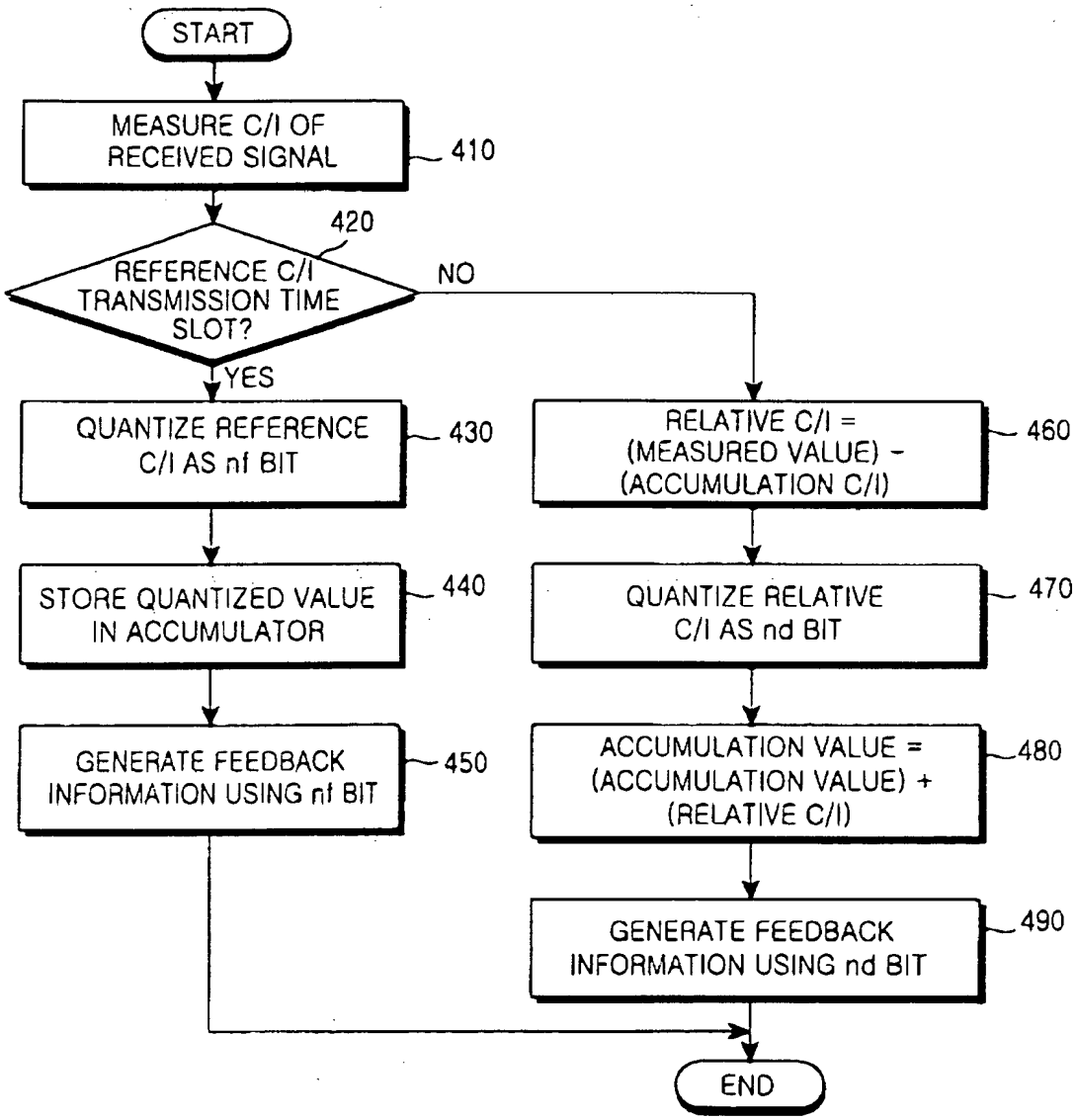
START
MEASURE C/I OF RECEIVED SIGNAL
410
420
REFERENCE C/I TRANSMISSION TIME SLOT?
NO
YES
QUANTIZE REFERENCE C/I AS nf BIT
430
STORE QUANTIZED VALUE IN ACCUMULATOR
440
GENERATE FEEDBACK INFORMATION USING nf BIT
450
RELATIVE C/I = (MEASURED VALUE) - (ACCUMULATION C/I)
460
QUANTIZE RELATIVE C/I AS nd BIT
470
ACCUMULATION VALUE = (ACCUMULATION VALUE) + (RELATIVE C/I)
480
GENERATE FEEDBACK INFORMATION USING nd BIT
490
END

FIG.4

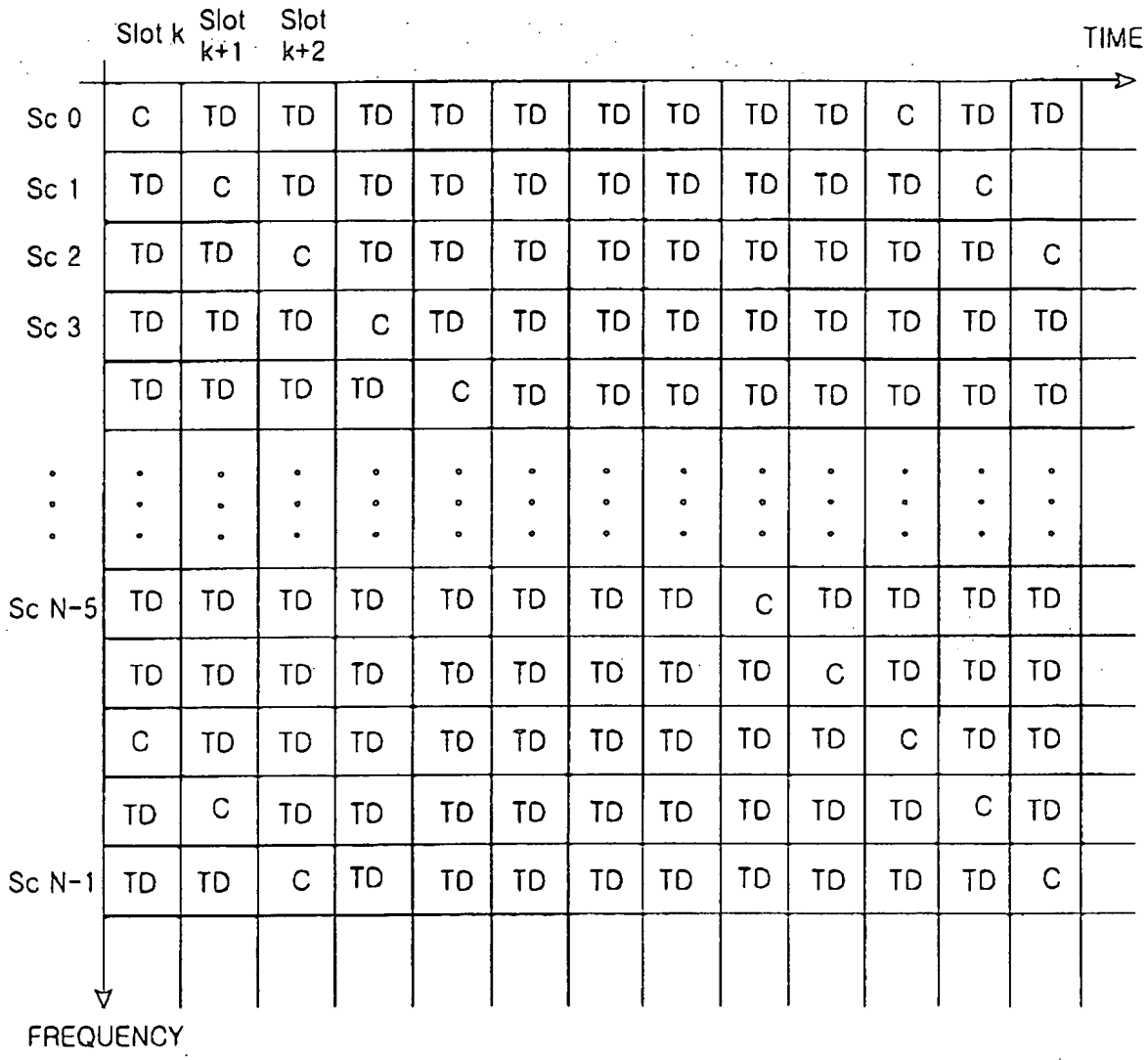
Slot k
Slot k+1
Slot k+2
TIME
Sc 0
Sc 1
Sc 2
Sc 3
Sc N-5
Sc N-1
FREQUENCY

FIG.5

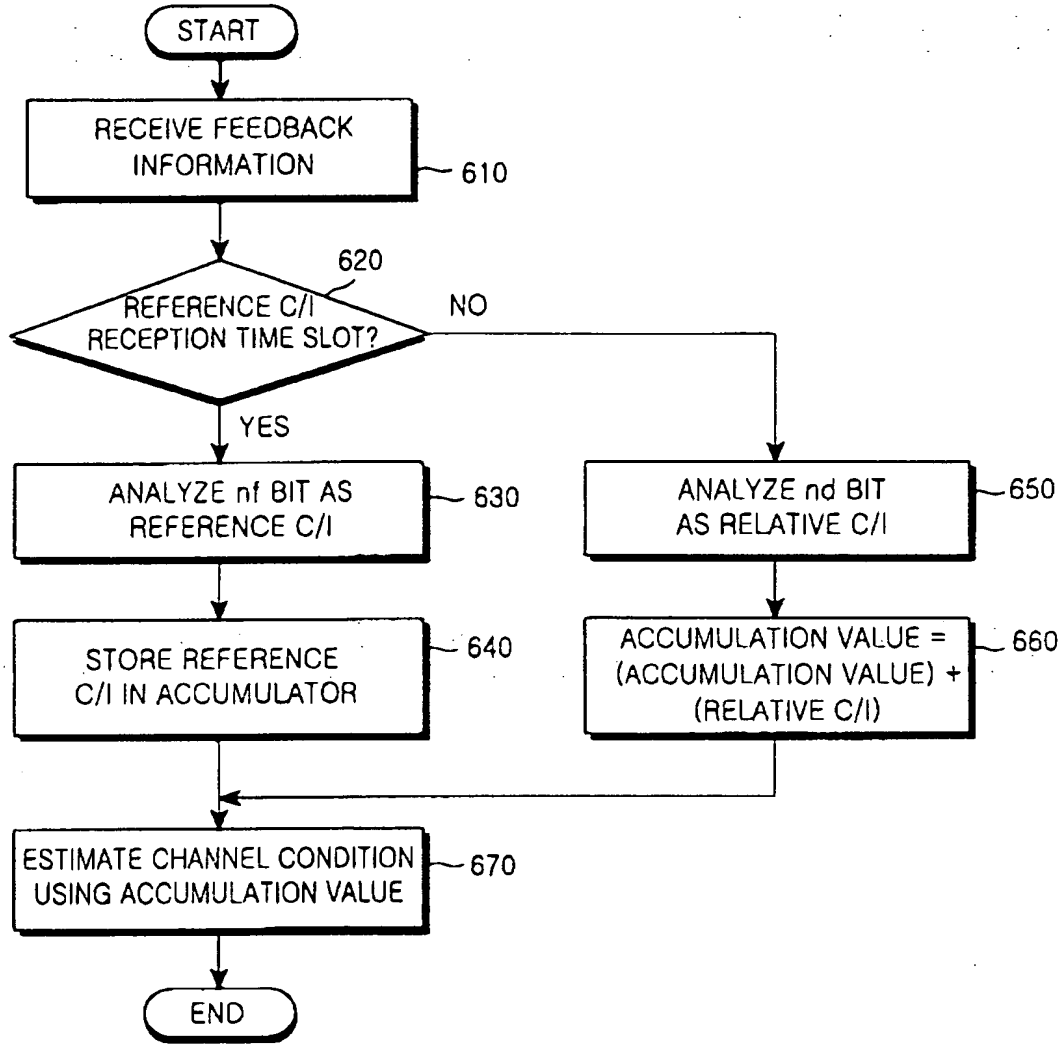
START
RECEIVE FEEDBACK INFORMATION
610
620
REFERENCE C/I RECEPTION TIME SLOT?
NO
YES
ANALYZE nf BIT AS REFERENCE C/I
630
ANALYZE nd BIT AS RELATIVE C/I
650
STORE REFERENCE C/I IN ACCUMULATOR
640
ACCUMULATION VALUE = (ACCUMULATION VALUE) + (RELATIVE C/I)
660
ESTIMATE CHANNEL CONDITION USING ACCUMULATION VALUE
670
END

FIG.6

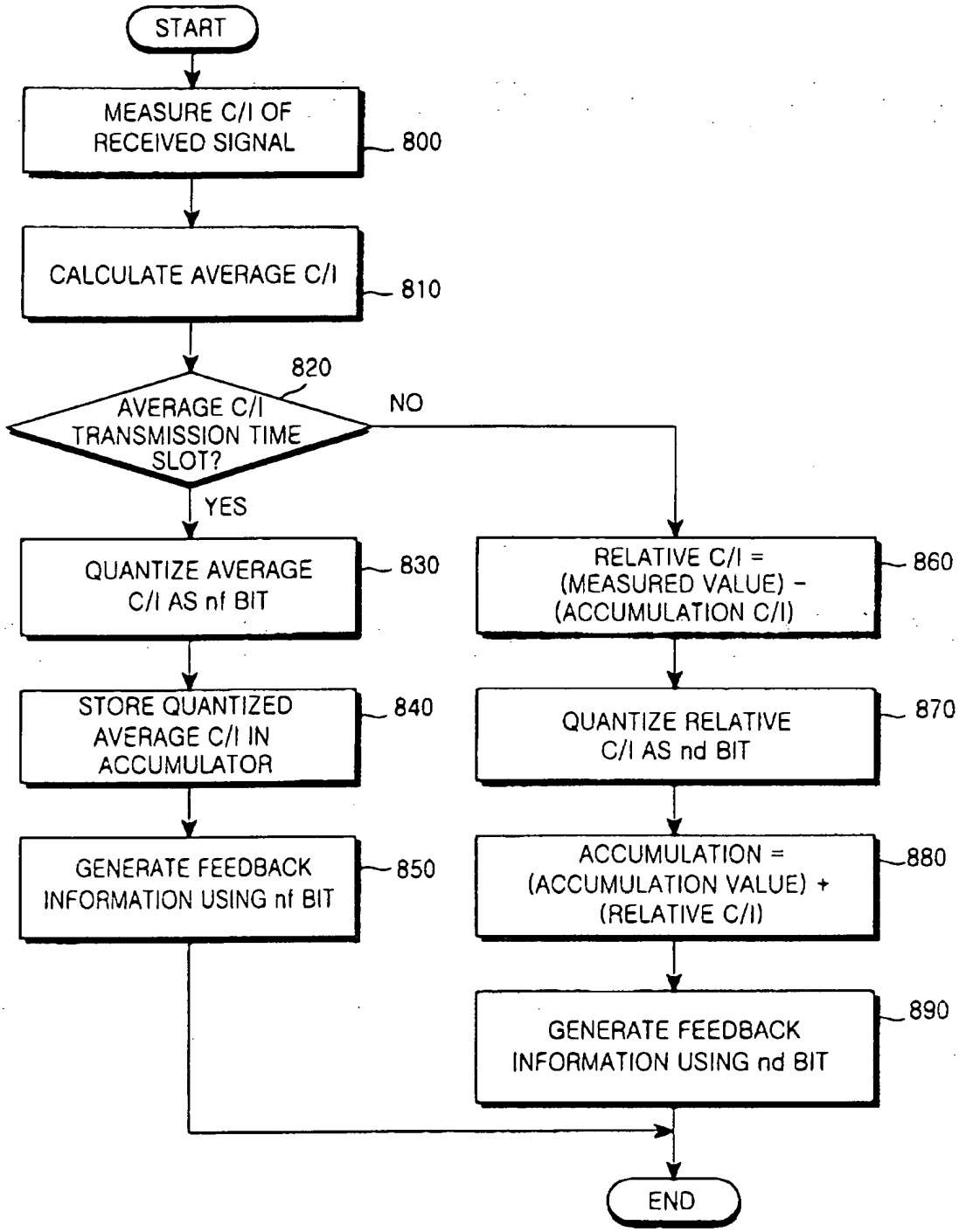
START
MEASURE C/I OF RECEIVED SIGNAL
800
CALCULATE AVERAGE C/I
810
820
AVERAGE C/I TRANSMISSION TIME SLOT?
NO
YES
QUANTIZE AVERAGE C/I AS nf BIT
830
STORE QUANTIZED AVERAGE C/I IN ACCUMULATOR
840
GENERATE FEEDBACK INFORMATION USING nf BIT
850
RELATIVE C/I = (MEASURED VALUE) - (ACCUMULATION C/I)
860
QUANTIZE RELATIVE C/I AS nd BIT
870
ACCUMULATION = (ACCUMULATION VALUE) + (RELATIVE C/I)
880
GENERATE FEEDBACK INFORMATION USING nd BIT
890
END

FIG.7

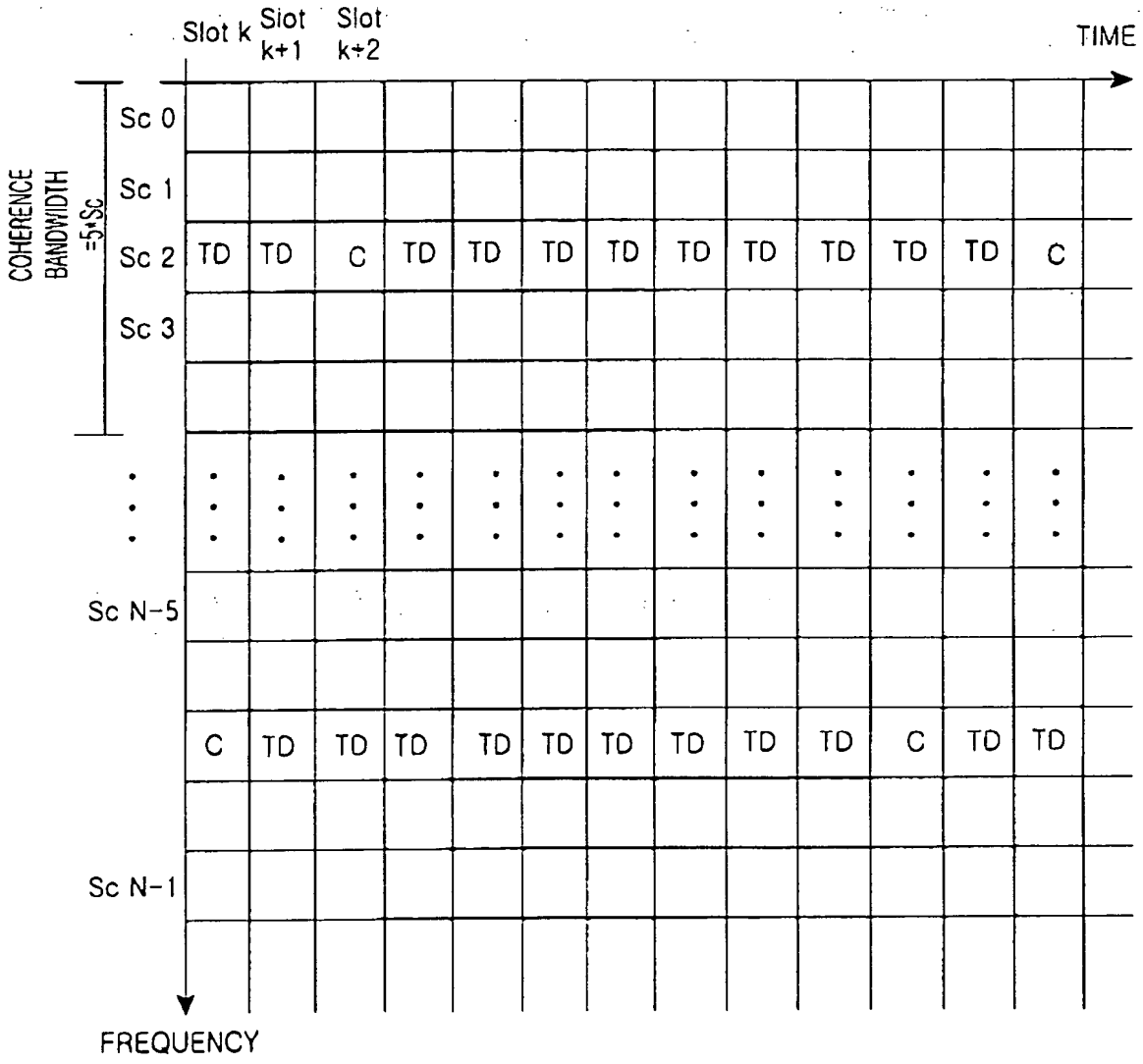
Slot k
Slot k+1
Slot k+2
TIME
COHERENCE BANDWIDTH =5*Sc
Sc 0
Sc 1
Sc 2
Sc 3
Sc N-5
Sc N-1
TD
C
FREQUENCY

FIG.8

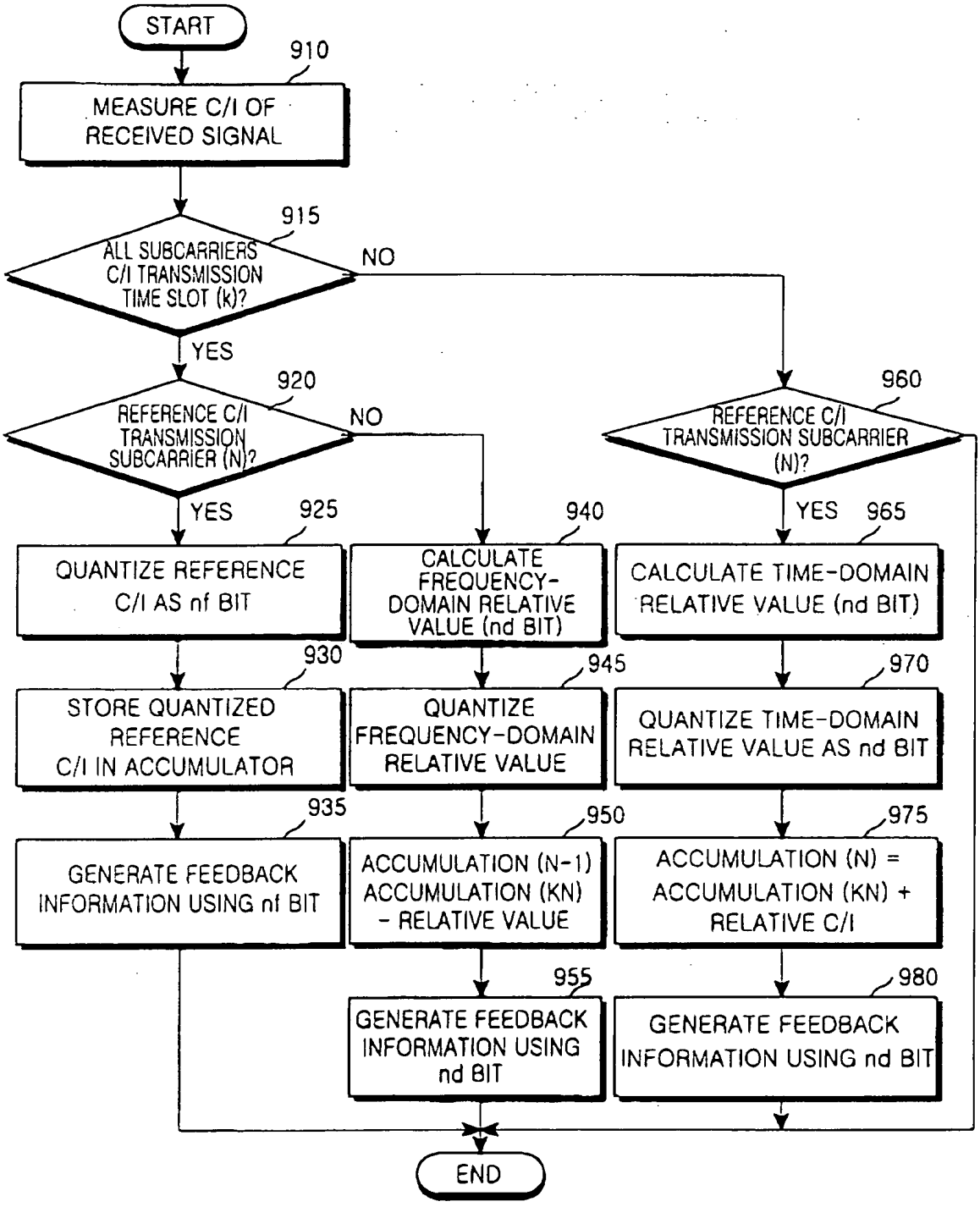
START
910
MEASURE C/I OF RECEIVED SIGNAL
915
ALL SUBCARRIERS C/I TRANSMISSION TIME SLOT (k)?
NO
YES
920
REFERENCE C/I TRANSMISSION SUBCARRIER (N)?
NO
960
REFERENCE C/I TRANSMISSION SUBCARRIER (N)?
YES
925
QUANTIZE REFERENCE C/I AS nf BIT
940
CALCULATE FREQUENCY-DOMAIN RELATIVE VALUE (nd BIT)
YES
965
CALCULATE TIME-DOMAIN RELATIVE VALUE (nd BIT)
930
STORE QUANTIZED REFERENCE C/I IN ACCUMULATOR
945
QUANTIZE FREQUENCY-DOMAIN RELATIVE VALUE
970
QUANTIZE TIME-DOMAIN RELATIVE VALUE AS nd BIT
935
GENERATE FEEDBACK INFORMATION USING nf BIT
950
ACCUMULATION (N-1) ACCUMULATION (KN) - RELATIVE VALUE
975
ACCUMULATION (N) = ACCUMULATION (KN) + RELATIVE C/I
955
GENERATE FEEDBACK INFORMATION USING nd BIT
980
GENERATE FEEDBACK INFORMATION USING nd BIT
END

FIG.9

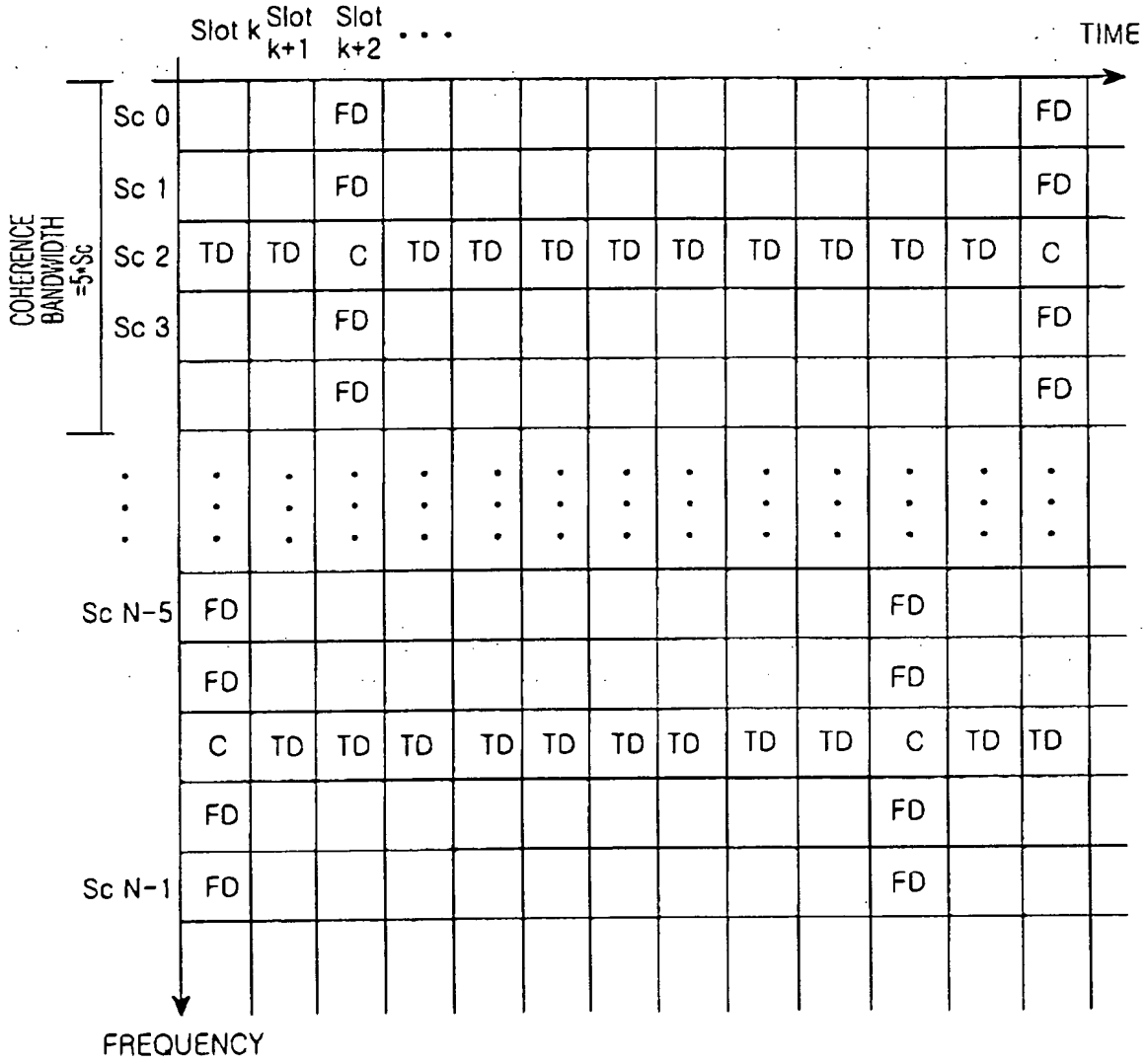
Slot k
Slot k+1
Slot k+2
TIME
COHERENCE BANDWIDTH =5*Sc
Sc 0
Sc 1
Sc 2
Sc 3
Sc N-5
Sc N-1
FD
TD
C
FREQUENCY

FIG.10

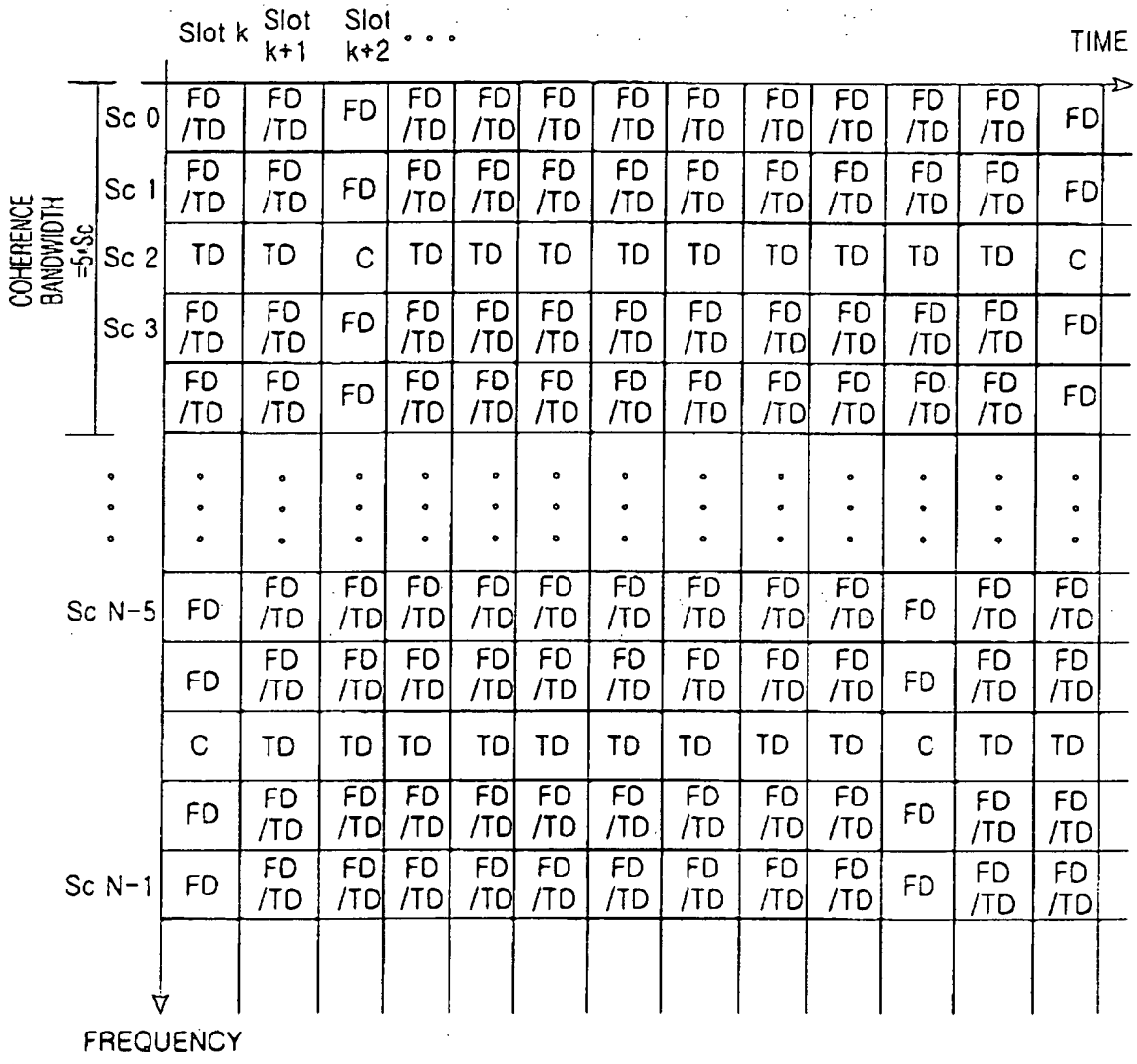
Slot k
Slot k+1
Slot k+2
TIME
COHERENCE BANDWIDTH =5*Sc
Sc 0
Sc 1
Sc 2
Sc 3
Sc N-5
Sc N-1
FD /TD
TD
C
FD
FREQUENCY

FIG.11

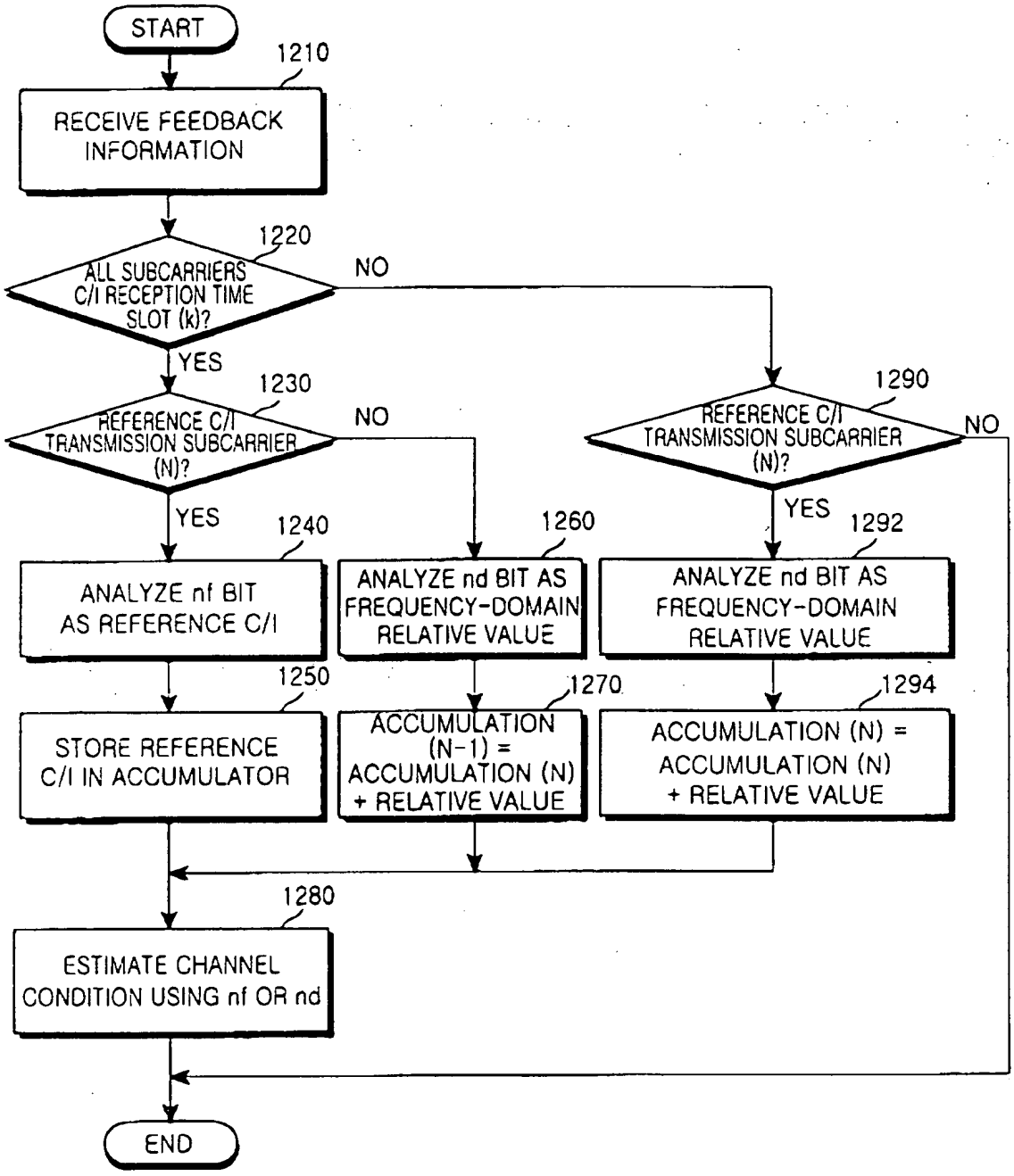
START
1210
RECEIVE FEEDBACK INFORMATION
1220
ALL SUBCARRIERS C/I RECEPTION TIME SLOT (k)?
NO
YES
1230
REFERENCE C/I TRANSMISSION SUBCARRIER (N)?
NO
YES
1290
REFERENCE C/I TRANSMISSION SUBCARRIER (N)?
NO
YES
1240
ANALYZE nf BIT AS REFERENCE C/I
1260
ANALYZE nd BIT AS FREQUENCY-DOMAIN RELATIVE VALUE
1292
ANALYZE nd BIT AS FREQUENCY-DOMAIN RELATIVE VALUE
1250
STORE REFERENCE C/I IN ACCUMULATOR
1270
ACCUMULATION (N-1) = ACCUMULATION (N) + RELATIVE VALUE
1294
ACCUMULATION (N) = ACCUMULATION (N) + RELATIVE VALUE
1280
ESTIMATE CHANNEL CONDITION USING nf OR nd
END

FIG.12